

From the author

Anti-Typhoid Vaccination

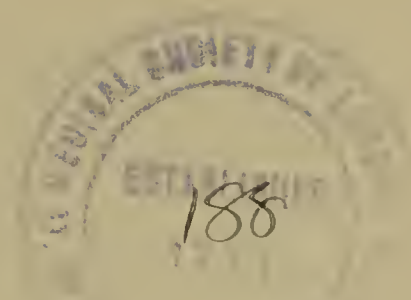
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Reprinted from the
"Craigleith Hospital Chronicle"
February 1915.



Anti-Typhoid Vaccination

By SIR LAUDER BRUNTON, BART., M.D., F.R.S.



WHEN I was a student in Edinburgh, rather more than fifty years ago, I passed daily, on my way to college, a blind man who sat at the entrance to Waverley Station, opposite Scott's Monument. He had a little dog beside him, and a large open Bible on his knees, from which he read aloud as his fingers passed over its embossed pages. He was deeply pitted by smallpox, and where his eyes should have been were two deep holes into which his eyelids were tightly drawn. The smallpox had attacked his eyes so badly as to convert them into purulent matter, which dropped out, leaving only the empty orbits. Such a case as this one I never see now, and indeed it is rare to see anyone pitted by smallpox.

It is very difficult, almost impossible, for the present generation to understand the horror with which our forefathers regarded this awful disease, which in a few days might transform the belle of a ballroom, on whose beauty every eye gazed with delight, into an object which one could hardly look at without loathing. And the fear which the disease inspired was all the greater because no means was known either of

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curing or preventing it. Why has this fear ceased? why have the ravages of smallpox disappeared? Is it because the disease has lost its virulence, or because a method has been found to destroy its power for evil? A single illustration from my own professional experience will show better than any amount of statistics that the disease is as malignant as ever, but that it has been robbed of its power for evil by vaccination.

When I first settled in London in 1870, I became attached to a dispensary as one of its medical officers, whose duty it was not only to see patients at the dispensary, but to visit in their own homes those who were too ill to come out. One day I was asked to go and see a baby with smallpox. On going into the room I saw, lying on its mother's knees, an object which, as far as size and general shape were concerned, seemed to be a baby, but its face was so covered with smallpox that its features were almost beyond recognition. And this was not the case with the face only. The whole head and body were so covered with pustules that there was not a single spot as large as the tip of one's little finger free from them. It was as bad a case of confluent smallpox as it was possible to imagine. Mercifully the baby died in about two days. Had it grown up, it would have been blind and scarred, just like the poor man of whom I have already spoken. Clearly the disease was as virulent in the case of the baby as the man.

But in the same room were four other children, of age ranging from about three to ten, who felt perfectly well, and grumbled because their mother would not allow them to go and play with other children for fear of infection. To all appearance they were perfectly well, but on feeling the

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foreheads carefully, I could feel here and there a little hardness like half a pin's head under the skin. This was all that showed that the disease had not entirely passed them by, and that the mother's refusal to let them play with other children was well grounded. On the mother's forehead absolutely nothing could be felt. There was nothing whatever to show that she was not in perfect health, as she also felt herself to be.

What was the cause of this enormous difference between the effect of the disease on the baby and on the rest of the family? The baby was just three months old, and *had not been vaccinated*. The other children and the mother had all been thoroughly vaccinated, and had thus been rendered immune from attack by the smallpox, notwithstanding its virulent character, as shown by its effect on the baby, and notwithstanding the fact that the mother especially had every chance of becoming infected, for she nursed the baby night and day.

It may be instructive as well as interesting to enquire how such immunity has been attained. For a long time, probably for centuries, it had been observed that a person who had survived an attack of smallpox rarely had it a second time, although sometimes it might recur. It was also noticed that the disease varied in severity: in one epidemic it was deadly, in another it was mild. A mild attack, however, protected as thoroughly as a severe one. An attempt was made in the East to utilise this peculiarity by inoculating healthy persons with the pus from mild cases of smallpox. Unfortunately, such inoculation sometimes caused the disease in a severe form in the person inoculated, and the practice, which had been introduced from

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Turkey by Lady Mary Wortley Montague in 1718, gradually fell into disuse.

Dr Edward Jenner had noticed that persons who had much to do with cows, and in consequence had caught cowpox from them, seemed to be as completely immune from smallpox as those who had actually suffered from that disease. He accordingly introduced the plan of inoculating people with cowpox to protect them against smallpox. To this method the name of vaccination was applied, from the Latin word *vacca*, "a cow." He met with great opposition, but at length the advantages of his method became so manifest that opposition died out, and it was generally adopted.

Of late years a certain amount of opposition has again been raised by people who, having never seen a bad case of smallpox, do not know what it is, and do not realise that they owe their own safety to the fact that the majority of their countrymen have been vaccinated, so that an epidemic, increasing in virulence as it goes on, has been prevented.

Of late years it has been discovered that infective diseases are due to disease germs, which are minute organisms so small that they cannot be seen even with high powers of the microscope unless when stained by some dye. When they gain an entrance into the animal body they grow and multiply exceedingly, and give rise to characteristic symptoms, and often to death. Most of these diseases resemble smallpox in rarely recurring, after a first attack has been recovered from. The reason of this appears to be that the disease germs cause the formation in the body of substances which are destructive to them ; so that, unless they are too numerous or too virulent, they are destroyed



Morning Post, Friday, 5th March 1915

VALUE OF INOCULATION

Remarkable Figures from the Front

THE War Office publishes the following table showing the distribution of the cases of typhoid which have occurred in the British forces in the field between the categories of uninoculated, the fully inoculated, and the partially protected :—

	Cases.	Deaths
Uninoculated	359	48
Fully inoculated within two years (two doses) .	111	1
Partially protected (one dose)	136	1
Totals	<u>606</u>	<u>50</u>

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in the body of the patient, who then recovers. But the power of destroying the disease germs does not pass away at once. It may remain for months, for years, or for the rest of life.

It occurred to Pasteur, that, if disease germs were weakened in any way, by overheating them or by mixing them with some substance like carbolic acid which would injure them, the germs, thus weakened, might protect an animal or person against the disease in a virulent form. On testing his supposition he found it to be correct, and he introduced the method of inoculating animals against anthrax, which has probably saved enormous numbers of cattle, and millions of pounds to France. Working on the same lines, Sir Almroth Wright discovered that if the bacilli which are the disease germs of typhoid fever, are cultivated in broth, and then killed by heating the liquid, it protects those who are inoculated with it from the disease. It is best to give three inoculations at intervals of ten days. Each inoculation is likely to be followed by slight redness and soreness at the place of inoculation, and general *malaise* and discomfort, for several hours, or even a day. This is, however, a very small price to pay for the immunity which the inoculation confers, or the lessened risk to life, and for the smaller chance of either being ill oneself, or communicating the disease to others. The immunity is not absolute—a person who has been inoculated *may* take the disease, just as a person who has had smallpox or measles may have a second attack—but the risk is greatly lessened. Sir Wm. Leishman has shown that in the British Army typhoid is nearly six times, and Russell found it in the United States Army ten times, less frequent amongst the vaccinated than amongst the unvaccinated; whilst

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Hagberg Wright states in a letter to the *Times* of 15th January, that amongst British soldiers in India systematic anti-typhoid vaccination has reduced the death-rate in the eight years 1903 to 1911, from 4 per 1000 to 0.33 per 1000—a reduction of 97 per cent.

It seems incredible, that in face of these facts a certain number of faddists should try to deprive our soldiers of the safeguard of anti-typhoid inoculation, or, as it ought perhaps to be called, anti-typhoid vaccination. There is no cow in question, so it is often called inoculation; but it resembles vaccination rather than inoculation for smallpox in this respect, that, while it may cause temporary discomfort and feelings of illness, it never produces a fatal form of the disease against which it is employed as a protection.

If our soldiers only understood that anti-typhoid vaccination enormously increases their chances, not only of avoiding death, but of doing their duty efficiently, and of helping instead of hindering their comrades—as they would do if they were ill—and very greatly lessens the chance of their infecting others with the disease, no objection would be raised against vaccination, and they would one and all gladly and thankfully submit to it.